Electrical Engineering Fundamentals

Electrical Engineering · Answer Key · 15 Questions

1. What is the SI unit for electric potential difference, also known as voltage?

A) Ampere (A)
B) Ohm (?)
C) Volt (V)
D) Farad (F)

2. Which fundamental law states that the total current entering a junction is equal to the total current leaving it?

A) Ohm's Law
B) Kirchhoff's Current Law (KCL)
C) Kirchhoff's Voltage Law (KVL)
D) Joule's Law

3. What is the primary function of a capacitor in an electrical circuit?

A) To oppose current flow
B) To store electrical energy in an electric field
C) To convert electrical energy to heat
D) To amplify electrical signals

4. In AC circuits, what term describes the opposition to current flow due to inductance?

A) Resistance
B) Capacitance
C) Reactance
D) Conductance

5. What is the standard symbol for a diode?

A) A circle with a sine wave inside
B) A triangle pointing towards a line
C) Two parallel lines
D) A circle with an 'X' inside

6. Which type of electrical conductor is typically used for high-frequency applications due to the skin effect?

A) Solid copper wire
B) Hollow conductor
C) Aluminum wire
D) Steel wire

7. What is the unit of electrical power?

A) Joule
B) Watt
C) Coulomb
D) Hertz

8. What does the term 'RMS' stand for in the context of AC voltage and current?

A) Root Mean Square
B) Relative Measurement Standard
C) Radian Modulated Signal
D) Rotor Magnetic Stability

9. What is the main purpose of a transformer?

A) To generate electricity
B) To change AC voltage levels
C) To store DC energy
D) To rectify AC to DC

10. Which semiconductor material is most commonly used in the fabrication of transistors and integrated circuits?

A) Germanium
B) Gallium Arsenide
C) Silicon
D) Indium Phosphide

11. What is the unit of electrical resistance?

A) Siemens (S)
B) Farad (F)
C) Henry (H)
D) Ohm (?)

12. Which law describes the relationship between voltage, current, and resistance in a simple electrical circuit?

A) Ampere's Law
B) Faraday's Law
C) Ohm's Law
D) Coulomb's Law

13. What is the SI unit for electric charge?

A) Volt (V)
B) Ampere (A)
C) Farad (F)
D) Coulomb (C)

14. What is the primary difference between a series and a parallel circuit?

A) In series, components share current; in parallel, they share voltage.
B) In series, components share voltage; in parallel, they share current.
C) Series circuits have only resistors, parallel circuits have only capacitors.
D) Series circuits are always AC, parallel circuits are always DC.

15. Which component is designed to protect a circuit from excessive current by melting and breaking the circuit?

A) Capacitor
B) Inductor
C) Resistor
D) Fuse